

A new race of *Trogonoptera brookiana* Wallace (Lepidoptera: Papilionidae) from West Malaysia

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Synopsis

The population of *T. brookiana*, occurring on the eastern to south-eastern side of the Malay Peninsula, previously regarded as being identical to the race *trogon* Vollenhoven from Sumatra, is here recognised and described as a distinct sub-species, differing significantly from *trogon* on morphological and geographical grounds.

Discussion

The genus *Trogonoptera* Rippon comprises two species confined to Sundaland (excluding Java) which are *T. brookiana* Wallace and *T. trojana* Honrath. The latter species is confined to Palawan, but *T. brookiana* is known to occur in four races, *T. b. brookiana* (Borneo, Balabac Is.), *T. b. natunensis* (Natuna Is), *T. b. albescens* (West Malaysia) and *T. b. trogon* (Sumatra).

About 1937, specimens of a population of *T. brookiana* were taken in the swamps of south-eastern Johore by Eliot and Cowan. Corbet and Pendlebury (1956) merely refer to this population as being *trogon*, which decision does not appear to have been formally published with irrefutable evidence as to its conspecificity with *trogon*.

Fleming (1975) follows Corbet and Pendlebury in treating this population as *trogon*.

Eliot has since published two references to this population (1958; 1973) and in neither does he appear to be aware of its possibly different identity. D'Abbrera (1975) suspected the existence of an anomalous situation be-

tween *trogon* from Sumatra and the population being described here. Other specimens of this population have also been taken at various localities in Trengganu State by different collectors, and there have been verbal reports of sightings in localities between Trengganu and Johore on the eastern side of the central massif, at low to medium elevations.

On a recent excursion to West Malaysia, the first author was shown specimens of this population belonging to the collections of the other two authors as well as to those of W. A. Fleming and his wife, Alix Fleming.

It soon became apparent that this population might differ from *trogon* and it was resolved to make a thorough examination of available material.

While external morphology appears distinctive enough, it is in the male genitalia that significant differences may be observed between *T. b. trogon* and the population now being described.

We do not agree with Eliot (1973) that the new population has only recently reached the Peninsula by immigration across the Straits of Malacca for indeed it is a puzzle that it is not established in the western portion of the Peninsula, obviously closer to Sumatra than is its present habitat. That the form has been present on the

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Malay Peninsula even before *albescens* must now be regarded as a possibility, with *albescens* being the more "recent" development of the two—indeed similarity of the eastern population to both *trogon* and *naturensis* emphasises rather the specialised nature of *albescens*.

If, as Zeuner suggests (1943: 147) the phase of divergence of *Trogonoptera* from ancestral *hypolitus* was in the late pliocene (his "W" stage) then it is to the early pleistocene ("Y" stage) that we can look for the beginnings of *albescens*. It is now apparent that the common ancestor of the *Trogonoptera* group spread westwards from the Celebes, one slightly northwards (*trogiana*) and the others across Borneo to Malaya and Sumatra. This would comfortably explain the presence of three similar forms in a westward configuration at similar elevations, with the undescribed form inhabiting the eastern side of the Peninsula.

That *albescens* has been the most recently isolated, specialised semimontane and successful form would also be thus explained, while it would be further clear why it has as yet not penetrated Thailand or Southern Burma. There is no doubting the capacity of *albescens* to surmount high terrain or fly across great distances, but because it appears to be still in the process of establishing itself in the north-west and central parts of the Peninsula (commercial plundering notwithstanding) it will only be a matter of time before it does invade Thailand and South Burma.

The other Peninsula population, however, is not as successful, and this would tend to draw attention to its comparative antiquity in terms of the respective ages of both races. Plainly, that *albescens* is the fitter of the two to survive, is now patently clear. We would also suggest that although *albescens* is a strong, successful in-

sect, it is also very strongly territorial when compared with *Ornithoptera* species or most *Troides*.

Individual specimens of *brookiana* have frequently been observed operating a particular corridor or flight path with almost ceaseless monotony. This behaviour is virtually unknown among the *Ornithoptera* or most *Troides*, which by comparison are very adventurous creatures. Its lack of willingness to colonize new territories is thus apparently explained. Other phenomena, such as the habit males have of congregating over seepage in large numbers, the confinement of the genus to Neomalaya, the development of a sphragis on the ostium of the female, and the difficulty naturalists have had in locating the breeding areas of most races show a conservatism and exclusiveness not known in any of the other allies of *Troides*. It is then interesting to note that in the experience of all of the few who have observed the eastern population, contrary to what is known about the other *brookiana* races, it is the female which is the most often encountered sex.

Eliot's (1973) comment that the two populations have not interbred so far because of differences in food plant is most probably true, but an examination of the genitalia also indicates why this is not probable.

Trogonoptera brookiana mollumar
subsp. nov.

Both sexes of this race wear the well-known livery of the *brookiana* group and detailed descriptions are not necessary. However, those individual characters which tend to distinguish it from its nearest (in appearance) relative, *T. b. trogon*, are here described. It must also be pointed out that this "new" race is nowhere as strongly sexually dimorphic as *albescens* or the nominate race.

MALE. Principal observable differences are mainly on the recto (above, upper) surface of the hindwing where the green discal area is more extensive than on *trogon* being extended to more than half the distance from the base of the h.w. to the dorsum. In the specimens examined the distal margin of this green disc is also very noticeably convex where in *trogon* it is straight in some specimens and markedly concave in others.

The space between veins* 7 and 8 is also very noticeably suffused with green scaling (closer to vein 7 than it is to vein 8) a feature which is almost non-existent in *trogon*, being at best a very occasional and weakly developed character in that race. The hindwing itself of *mollumar* differs noticeably in shape from that of *trogon* (and the other races) in the region of the apex. In this race vein 8 is more bowed close to the costa and vein 7 less bowed along its length than in *trogon*.

Consequently the apical margin of the hindwing of this race is more sharply angled away from the costa than it is on *trogon*, and indeed does not possess the faintly scalloped or incurved section of the dorsum between vein 7 and 8 which is a feature of *trogon* and *albescens*.

FEMALE. As in the male, the female also differs noticeably from *trogon* principally in the hindwing. The green discal area of the recto surface of the hindwing is more extensive than it is on *trogon*, occupying as it does more than half of the area of the hindwing, where in *trogon* it covers less than half the area of that wing. Further, the whitish sub-apical area of the f.w.r., only faintly indicated in *trogon*, is better developed on this race, as are

indeed the sub-marginal white spots on the hindwing.

MALE GENITALIA. Zeuner (1943: 115 Fig. 38) illustrates the clasper and harpe of *trogon* remarking as he does that "The other subspecies of *T. brookiana* Wall. have very similar claspers and harpes".

That this is so has been clear to us as well, so it is significant that such wide differences should exist between *trogon* and *mollumar*. Harpe spatulate with tapering neck and elongate body (in *trogon* this is poorly developed and just barely in-relief to the clasper on *trogon*); valvae elongate with better defined mid-marginal tooth than on *trogon*. Vinculum bulkier and blunter than on *trogon* (in which race it is narrow and produced into a somewhat bulbous saccus) produced into a finely sculptured saccus.

The apex angularis is short, blunt and sharply downcurved, while on *trogon* it is long, slender and very gently bent. The aedeagus, itself a variable feature among individual specimens of the *aristolochia* papillos, is here noted for a marked difference in the head of this organ between the two races. In *trogon* the head of the aedeagus is narrow and characterised by two lateral delta-shaped processes with a finely scooped-out apex. In *mollumar* no such processes exist, but the head of the aedeagus is tubiform and prognathic at its lower extremity.

Type Data

Holotype ♂ Ulu Sedili, Johore, W. Malaysia (V. Doggett).
17th February, 1974.
F.W. 8.5 cms.

Allotype ♀ Ulu Sedili, Johore, W. Malaysia (N. Parker).
29th August, 1971. F.W.
6.95 cms.

(Type specimens now in the British Museum (Nat. Hist.) Collection.)

*Because of its simplicity and unambiguous applicability to the Papilionoidea, the classical numerical system of notation is here applied, in preference to the cumbersome and currently fashionable Martynov system.

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scale
 5mm.

scale
 5mm

T. brookiana mollumar subsp. nov.
 (opposite clasper)

Trogonoptera brookiana trogon
 (opposite clasper)